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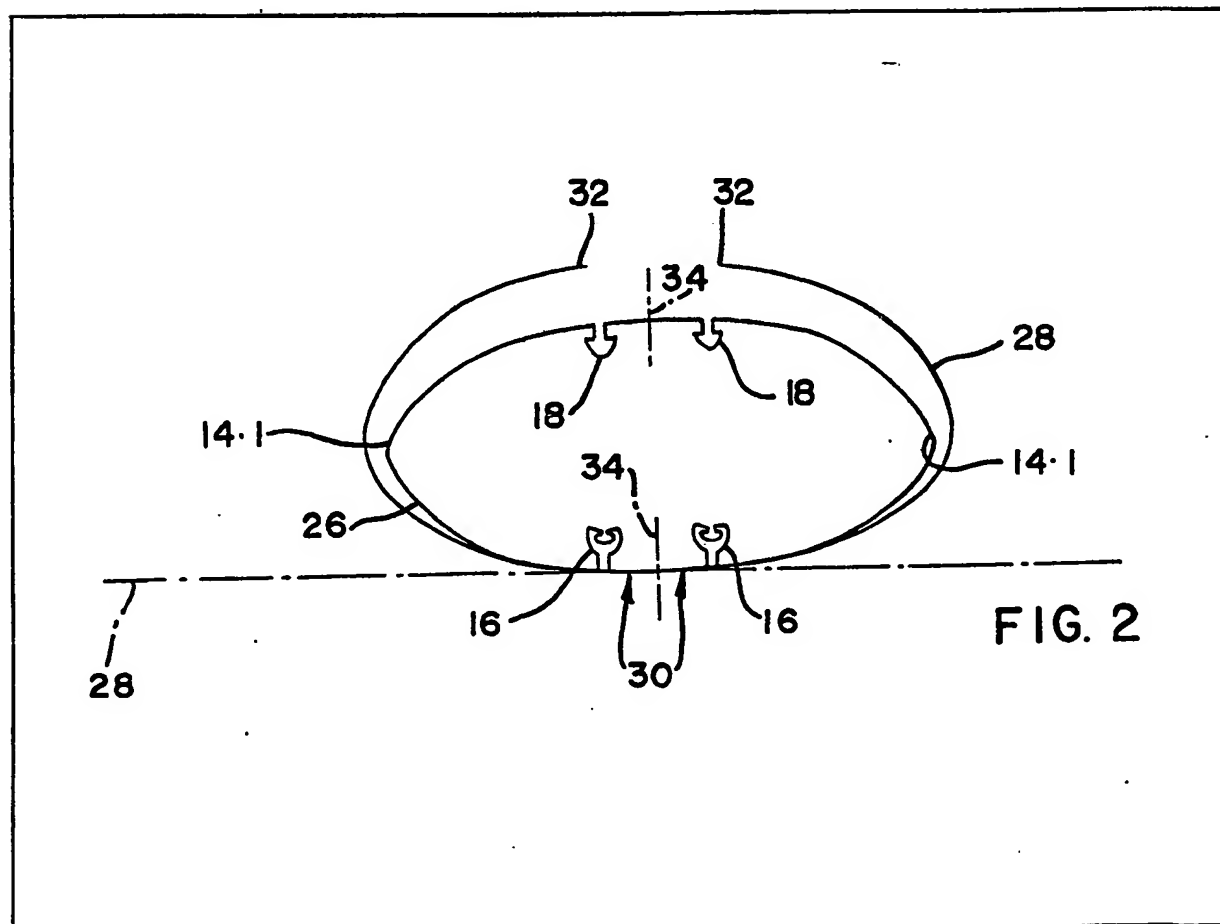
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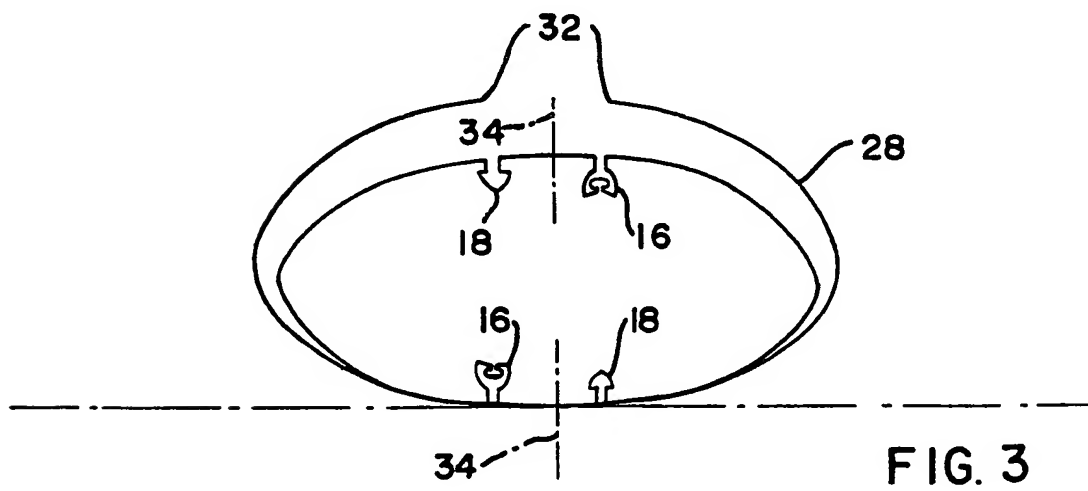
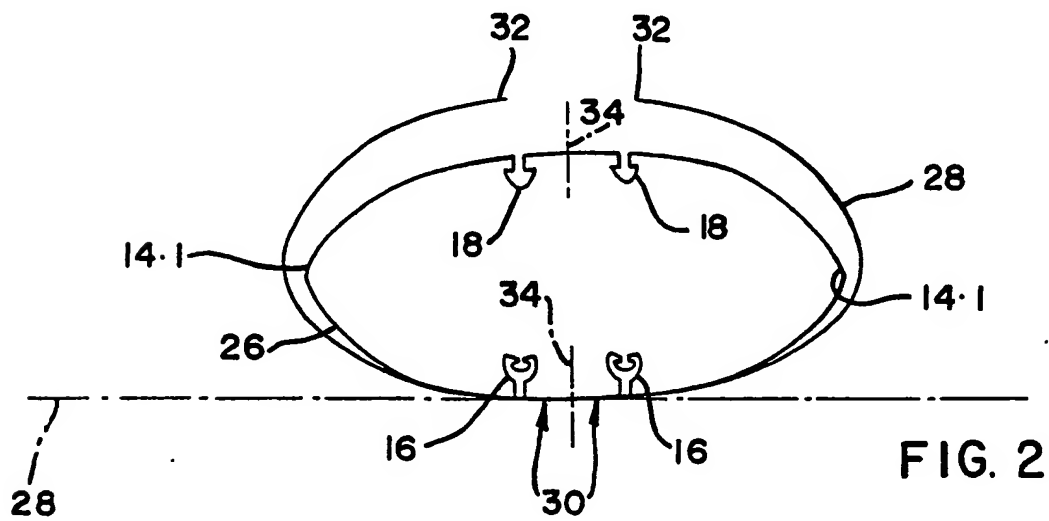
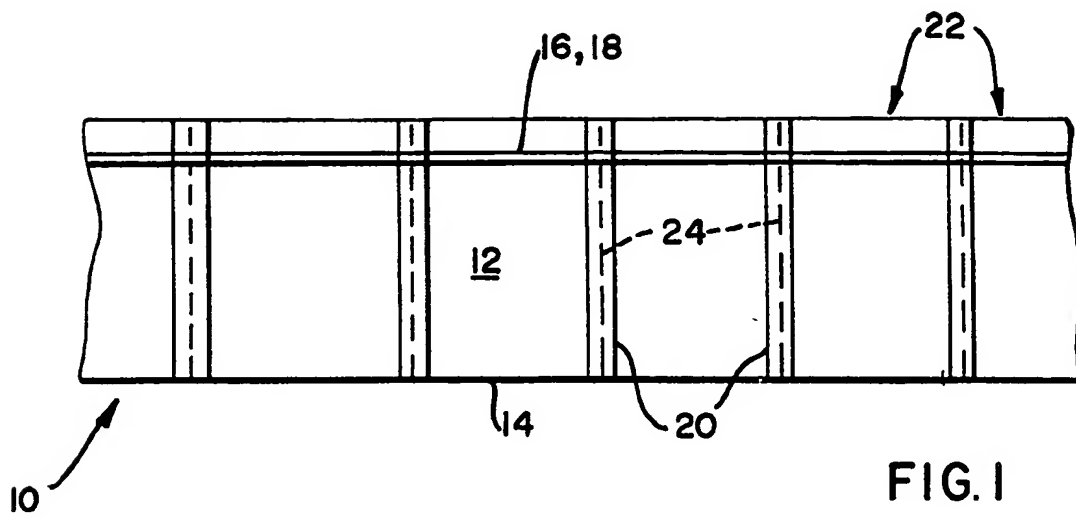
(54) Re-closable bags and the  
production thereof

(57) A multi-layered bag including  
synthetic plastics material has  
attached to opposed walls the  
interengageable male and female  
elements 18, 16 respectively of a strip  
fastener. The bags may be produced in  
strip form with each bag joined to the  
adjacent bags by means of welds  
extending transversely of the strip.  
Each transverse weld is associated

with a transverse line of perforations  
or weakness whereby the bags can  
readily be separated from one another.  
Production of the material for the  
multi-layered bags can be by way of  
co-extrusion of the materials or by  
lamination. According to one  
described method, two sheets of  
suitable material, preferably in the  
form of elongate webs, 26, 28 are  
laminated one to the other. In another  
form, a tube of material is externally  
sheathed thereby to provide the  
laminate. The tube in this latter form,  
or one of the sheets in the first form,  
carry the male and female parts of the  
snap-engaging releasable connection.  
After production of the laminated  
material, welding and perforating  
operations are performed to produce  
the strip of bags.



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## SPECIFICATION

## Re-closable bags and the production thereof

This invention relates to re-closable bags and to the production of such bags.

5 According to one aspect of the present invention there is provided a bag bounded by two opposed walls each of which is multi-layered, one of said walls carrying the female part and the other carrying the male part of snap-engaging

10 releasable connection, said one and other walls including synthetic plastics material and the female part including an elongate groove and the male part including an elongated rib which, when received in the groove, extends along the groove.

15 Each wall can include a synthetic plastics material substrate with a further material printed, deposited or coated onto it. Said further material is preferably a metal.

If desired at least one face of at least one layer can be printed, said one face being covered by a further layer, which further layer is transparent.

20 According to another aspect of the present invention there is provided a method of producing a bag which has two opposed walls each of which walls is multi-layered, the method comprising extruding a tube of synthetic plastics material having integral therewith, and internally thereof, the male and female parts of a snap-engaging

25 releasable connection, the female part including an elongate groove and the male part including an elongate rib which, when received in the groove, extends along the groove, sheathing said tube by securing a sheet of material to the outer face of the tube thereby to provide a laminate, and cutting

30 the tube longitudinally thereby to form a bag mouth, the snap-engaging releasable connection closing said mouth.

The method can include the further step of printing the outer face of the tube, or that face of said sheet which is juxtaposed to the outer face of the tube, prior to securing the tube and the sheet to one another, said sheet being transparent. Where the sheet is printed, the printing is reversed so that it appears the correct way round when

35 viewed from externally of the bag.

The method can also include the step of vacuum coating or metallising the outer face of the tube or that face of said sheet which is juxtaposed to the outer face of the tube, prior to securing the tube and the sheet to one another. Aluminium is preferable used to vacuum coat or

40 metallise said face.

45 According to a further aspect of the present invention there is provided a method of producing a bag which has two opposed walls each of which walls is multi-layered, the method comprising extruding synthetic plastics material having integral therewith, and protruding from one face thereof, the male and female parts of a snap-

50 engaging releasable connection, the female part including an elongate groove and the male part including an elongate rib which, when received in the groove, extends along the groove, juxtaposing

the other face of a sheet of such material to a further sheet, joining said sheets to form a laminate, and folding the laminate to bring said male and female parts into co-operating relationship.

This method can include the step of printing said other face of the first mentioned sheet, or that face of the further sheet which is juxtaposed to said other face of said first mentioned sheet, prior to securing the sheets together, said further sheet being transparent. Where the further sheet is

55 printed, the printing is reversed so that it appears the correct way round when viewed from externally of the bag.

This method may also include vacuum coating or metallising said other face of the first mentioned sheet or that face of said further sheet which is juxtaposed to said other face of said first mentioned sheet, prior to securing the sheets together. It is preferred to use aluminium to vacuum coat or metallise said face.

80 Said laminate is preferably in web form, the methods described further comprising transversely welding and perforating said laminate thereby to divide the laminate into a series of connected but separable bags.

90 For a better understanding of the present invention, and to show how the same may be carried into effect, reference will now be made, by way of example, to the accompanying drawing in which:—

95 Figure 1 illustrates part of an elongate strip of separable bags;

Figure 2 is a section illustrating one method of producing the strip of Figure 1; and

Figure 3 is a similar section illustrating a modified production method thereof.

100 The strip 10 illustrated in Figure 1 comprises two walls 12 joined to one another along a fold line 14. Each wall 12 is multi-layered and in the form illustrated the inner layer has extruded integrally therewith the female part 16 and the male part 18 of a snap-engaging releasable connection. These parts are better illustrated in Figures 2 and 3 and, as will be seen from these

105 Figures, the female part 16 includes an elongate groove and the male part 18 includes an elongate rib, the rib being receivable in the groove whereby the rib extends along the groove.

A series of zones 20 spaced from one another in the direction of the length of the strip divide the strip into a series of connected but readily separable bags 22. At each zone 20 the walls 12 are welded to one another and in each zone 20 there is a line of perforations 24. If desired, there can be spaced pairs of weld lines with the lines of perforations running between the weld lines. The perforations can be replaced by thin walled sections which are weaker than the remainder of the walls 12.

Each wall 12 is composed of two or more layers of material. Production of the material from which the strip 10 is produced can be by co-extrusion, by lamination, or by printing or coating onto a substrate a material which has requisite

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barrier or other properties.

In Figure 2 a preferred method of production is diagrammatically illustrated. A tube 26 of synthetic plastics material is extruded and expanded in conventional manner, the male and female parts 16, 18 of the snap-engaging releasable connection being integral with the inner face of the tube.

A flat sheet of synthetic plastics material 28 in web form is then secured to the outer face of the tube in the region designated 30. Attachment of the sheet 28 to the outer face of the tube 26 can be by means of a suitable adhesive or by heating the tube and sheet to soften them so that they unite when pressed into contact.

By running the tube and sheet together past appropriate ploughs (not shown), the free edge portions of the sheet 28 can be turned over, from the chain dotted position as shown in Figure 2 through the full line position to a position in which the free edges 32 of the sheet 28 abut. The tube 26 is, of course, in a flattened condition at this time with the parts 16, 18 interlocked. The drive and guide rollers between the sheet 28 and tube 26 are run are grooved to receive the parts 16, 18. As the tube is flattened, the folds 14 are formed at the regions designated 14.1.

Once the described condition has been reached, the sheet 28 is in face-to-face contact with the outer face of the tube 26 over the entire circumference of the tube 26. By pressing the sheet and tube into contact between heated rollers which are also grooved as described above, the sheet 28 can be welded to the outer face of the tube 26.

Subsequently, the laminate thus formed is transversely sealed and perforated or weakened to produce the zones 20. Finally, the tube is split longitudinally along the lines 34 to provide two strips of bags 22 with adjacent bags joined to one another by way of the zones 20. The parts 16, 18 close the bag mouths.

In Figures 3 the parts 16, 18 are differently arranged.

The outer face of the tube 26, or that face of the sheet 28 which faces the tube 26, can be printed. If it is the sheet 28 which is printed, the printing is reversed so that it does not appear backwards when viewed from outside the bag through the transparent sheet 28. It is also possible to vacuum coat or metallize one of these surfaces. Aluminium can be used.

While a two ply laminate has been described, with the addition of printing or coating materials, it is possible to use three or more plies depending on the properties that are required.

It is also possible to form the laminate using two flat webs, one of which has the parts 16, 18 protruding from one face thereof, instead of using the tube 26 and the sheet 28 which itself is in the web form. Also, instead of extruding the parts 16, 18 integrally with said one web, the parts 16, 18 can be extruded integrally with ribbons which are thereafter attached to the laminate. The ribbons can be secured to one face of the laminate.

Alternatively, the ribbons can have edge portions thereof between the two webs, the ribbons being secured in place when the webs are joined to form the laminate.

Where ribbons are used each may have two parts 16, two parts 18, or one part 18 and one part 16. This enables a double closure to be obtained.

## CLAIMS

1. A bag bounded by two opposed walls each of which is multi-layered, one of said walls carrying the female part and the other carrying the male part of snap-engaging releasable connection, said one and other walls including synthetic plastics material and the female part including an elongate groove and the male part including an elongate rib which, when received in the groove extends along the groove.

2. A bag as claimed in claim 1, wherein each wall includes a synthetic plastics material substrate with a further material printed, deposited or coated onto it.

3. A bag as claimed in claim 2, wherein said further material is a metal.

4. A bag as claimed in claim 1, wherein at least one face of at least one layer has printing thereon, said one face being covered by a further layer, which further layer is transparent.

5. A method of producing a bag which has two opposed walls each of which walls is multi-layered, the method comprising extruding a tube of synthetic plastics material having integral therewith, and internally thereof, the male and female parts of a snap-engaging releasable connection, the female part including an elongate groove and the male part including an elongate rib which, when received in the groove, extends along the groove, sheathing said tube by securing a sheet of material to the outer face of the tube thereby to provide a laminate, and cutting the tube longitudinally thereby to form a bag mouth, the snap-engaging releasable connection closing said mouth.

6. A method as claimed in claim 5, and including the step of printing the outer face of the tube, or that face of said sheet which is juxtaposed to the outer face of the tube, prior to securing the tube and the sheet to one another, said sheet being transparent.

7. A method as claimed in claim 5, and including the step of vacuum coating or metallising the outer face of the tube or that face of said sheet which is juxtaposed to the outer face of the tube, prior to securing the tube and the sheet to one another.

8. A method as claimed in claim 7, wherein aluminium is used to vacuum coat or metallise said face.

9. A method of producing a bag which has two opposed walls each of which walls is multi-layered, the method comprising extruding synthetic plastics material having integral therewith, and protruding from one face thereof, the male and female parts of a snap-engaging

releasable connection, the female part including an elongate groove and the male part including an elongate rib which, when received in the groove, extends along the groove, juxtaposing the other

5 face of a sheet of such material to a further sheet, joining said sheets to form a laminate, and folding the laminate to bring said male and female parts into co-operating relationship.

10. A method according to claim 9 and

10 including the step of printing said other face of the first mentioned sheet, or that face of the further sheet which is juxtaposed to said other face of said first mentioned sheet, prior to securing the sheets together, said further sheet being

15 transparent.

11. A method as claimed in claim 9, and including vacuum coating or metallising said other face of the first mentioned sheet or that face of

20 said further sheet which is juxtaposed to said other face of said first mentioned sheet, prior to securing the sheets together.

12. A method as claimed in claim 11, wherein aluminium is used to vacuum coat or metallise said face.

25 13. A method as claimed in any one of claims 5 to 12 wherein said laminate is in web form, the method further comprising transversely welding and perforating said laminate thereby to divide the laminate into a series of connected but separable

30 bags.

14. A bag substantially as hereinbefore described with reference to the accompanying drawing.

35 15. A method of producing a bag substantially as hereinbefore described with reference to the accompanying drawing.